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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,271	09/23/2005	Hiroyasu Yumura	017700-0177	1269
22428 7590 02/05/2007 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			EXAMINER SOON, SHELDON STEWART	
			ART UNIT	PAPER NUMBER
			2809	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/05/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/550,271

Applicant(s)

YUMURA ET AL.

Examiner

Sheldon S. Soon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09/23/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,5,9 and 10 is/are rejected.
- 7) ☒ Claim(s) 2, 6,7 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/23/05 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 09/23/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the insulator of claim 2, the multilayer structure of normal-conducting wire of claim 5, the insulator between normal-conducting metal layers of claim 6, the wound superconducting wires of claim 7, the former of twisted wires of claim 9 and the former of compressed wires of claim 10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: Page 6 line 11, refers to, "superconducting wires contain a certain amount of matrix", and presumably should say, "contain a certain amount of silver or silver alloy within the matrix", as implied by claim 7. Appropriate correction is required.

Claim Objections

3. Claim 1 is objected to because of the following informalities: The claim fails to mention the use or capacity of a refrigerant, thus implying room temperature superconduction. Appropriate correction is required.

4. Claims 2, 5, 6, 7 and 9 are objected to because of the following informalities: The subject matter needs to be clearly defined by a diagram. Appropriate correction is required.

5. Claims 2-10 are objected to as being dependent upon a rejected base claim. Claims 2, 6-8 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 4 and 9 are objected to because of the following informality: The claims state the metal wires include wire insulating layers around their outer circumference. It is unclear whether the wires are individually insulated or the bundle is insulated. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

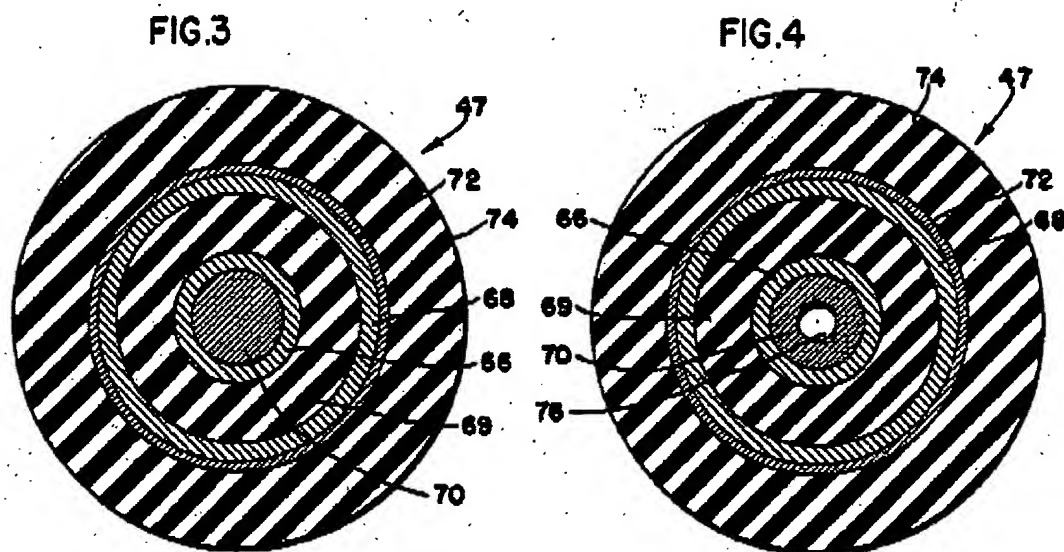
8. Claim 1 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim fails to specify electrical connectivity between the former and the first superconducting layer as is implied on page 13 line 2.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Snowden (U S Patent 3,612,742), herein referred to as Snowden.



Figures 3 and 4 taken from Snowden

11. Claim 1 – Snowden discloses all the elements of the instant invention including, a superconducting cable (column 2 line 22), a former made of a normal-conducting metal (column 4 lines 18-22, item 70 above), a first superconducting layer (column 3 lines 71-73, item 66 above), an electrical insulation layer (column 4 line 1, item 69 above), and a second superconducting layer (column 3 lines 71-73, item 68 above). Snowden fails to show a normal conducting metal layer formed between the insulating layer and the second superconducting layer. Snowden does however show a normal conducting metal layer outside the second superconducting layer (column 4 lines 18-22, item 72 above). It would have been obvious to one having ordinary skill in the art at the time of the invention to exchange the position of the second superconducting layer with the normal conducting layer, since it has been held that a mere reversal of the essential working parts of a device involves only routine skill in the art. In re Einstein, 8 USPQ

167. Furthermore, this would reduce the electromagnetic interference between the superconducting layers.

12. Claim 9 - As best understood by the examiner (see previous objection), Snowden discloses all the elements of claim 1 of the claimed invention, but fails to disclose the former is formed by the twisting a plurality of normal-conducting metal wires, and said normal-conducting metal wires include wire insulating layers around their outer circumference. It would have been obvious to someone of ordinary skill in the art at the time of the invention to use compression molding to fabricate the former in the cable of Snowden, using twisted wires since the examiner takes official notice of the equivalence of a twisted former of plural wires, a compressed former of plural wires and a single wire former for their use in the construction of a superconducting cable. Furthermore, it was well known in the art at the time of the invention to insulate the bundle of wires is shown by Snowden (item 74 in figure 3). The use of any of these equivalents to fabricate such a cable would be within the level of ordinary skill in the art.

13. Claim 10 - Snowden discloses all the elements of claim 1 of the claimed invention, but fails to disclose the former is formed by stranding a plurality of normal-conducting metal wires and applying compression molding to them to shape the cross section thereof into a round shape. It would have been obvious to someone of ordinary skill in the art at the time of the invention to use compression molding to fabricate the former in the cable of Snowden, since the examiner takes official notice of the equivalence of a compression fabricated former and a twisted former of plural wires, and a single wire former for their use in the construction of a superconducting cable.

The use of any of these equivalents to fabricate such a cable would be within the level of ordinary skill in the art.

14. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Snowden in view of Perez (U S PG PUB 2004/0020683) herein referred to as Perez.

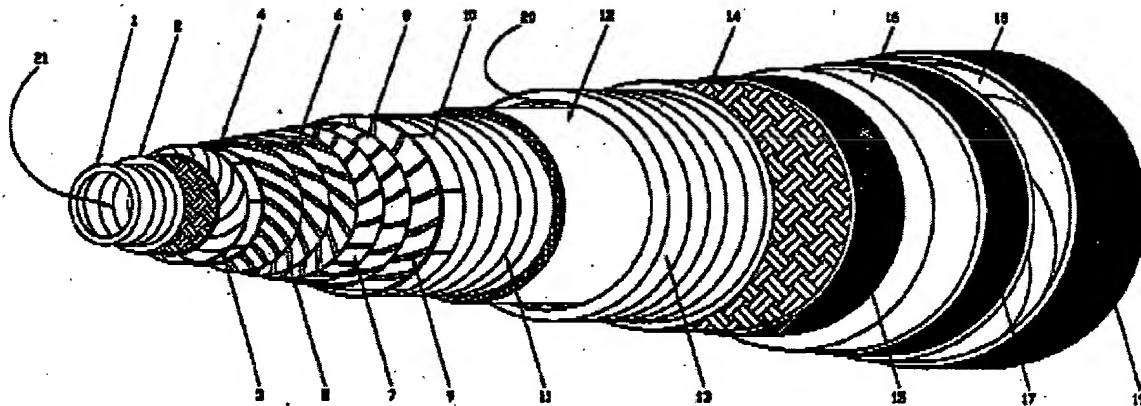


Figure 1 taken from Perez

15. Claim 3 – Snowden discloses all the elements of claim 1 of the claimed invention, but fails to disclose the normal-conducting metal layer is formed by winding round wires with around cross section or tape-shaped wires formed from a normal-conducting metal. Perez teaches the use of a layer of wrapped copper tape (item 3 in figure 1). It would have been obvious to someone of ordinary skill in the art at the time of the invention to use the wrapped conducting tape method of Perez in the cable of Snowden since it was known to be an economical method in lieu of other methods (i.e. sputtering, vapor deposition, electroplating, ect.).

16. Claim 4 – As best understood by the examiner (see previous objection), Snowden in view of Perez discloses all the elements of claims 1 and 3 of the claimed invention. Snowden further discloses the use of an insulating layer (item 74 in figure 3)

around the conducting layer (equivalence shown in claim 3 rejection). The reason such an insulator would be needed is to electrically isolate the conductor from other layers or from outside grounding.

17. Claim 5 - Snowden in view of Perez discloses all the elements of claim 1 and 3 of the claimed invention, but fails to disclose the normal-conducting metal layer has a multi-layer structure. Perez teaches the use of a multi-layer structure in items 1,2 and 3 in figure 1. It would have been obvious to one of ordinary skill at the time of the invention to use the multilayer normal-conducting metal layer of Perez in the cable of Snowden since Perez states in paragraph [0017], the steel mesh and tape help obtain a relatively flat surface (to lay the superconducting tape upon).

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hughey et al	U S PGPub 2003/0000731
Spreafico	U S PGPub 2002/0153162
Englehardt et al	US Pat no. 6,262,375
Norton et al	US Pat no. 6,849,580

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheldon S. Soon whose telephone number is 571-272-9092. The examiner can normally be reached on Monday through Friday 7:30-5:00 est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayprakash N. Gandhi can be reached on 571-272-9820. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sheldon S Soon
Examiner
Art Unit 2809

SSS

A handwritten signature in black ink, consisting of a stylized 'T' followed by a horizontal line and a vertical line intersecting it.

THAO X. LE
PRIMARY PATENT EXAMINER